

## NATURAL RESOURCES CONSERVATION SERVICE

### VIRGINIA CONSERVATION PRACTICE STANDARD

#### FIELD BORDER

(Feet)

Code 386

#### DEFINITION

A strip of permanent vegetation established at the edge or around the perimeter of a field.

#### PURPOSES

- Soil and water quality protection
- Management of harmful insect populations
- Provide wildlife food and cover

#### CONDITIONS WHERE PRACTICE APPLIES

At the edges of cropland fields and to connect other buffer practices within the field. May also apply to recreation land or other land uses where agronomic crops are grown.

This Standard is not to be used where water quality is the primary resource concern. Use the Virginia Conservation Practice Standards *Filter Strip (Code 393)* and/or *Riparian Herbaceous Cover (Code 390)* in lieu of this standard where appropriate.

This standard shall not apply where concentrated flows are anticipated, or to constructed channels along the edge of a row crop field, which will be used to receive and convey surface runoff. Refer to the Virginia Conservation Practice Standard *Grassed Waterway (Code 412)* in these situations.

#### CRITERIA

##### GENERAL CRITERIA APPLICABLE TO ALL PURPOSES

Minimum field border widths shall be based on the purpose or purposes for installing the practice, and will be increased if needed to provide sufficient turn around space for farm equipment.

The field borders will be established to adapted species of permanent grass, legumes, and/or shrubs.

The *Plant Establishment Guide for Virginia* will be used as the standard for selecting approved species.

Field borders will be established adjacent to field edges to the extent needed to meet the resource needs and producer objectives.

Plant material, seedbed preparation, seeding rates, dates, depths, and planting methods will be in accordance with this standard.

Ephemeral gullies and rills present in the planned border area will be smoothed as part of seedbed preparation.

The site will be graded to permit adequate drainage across the border. Concentrated water flow parallel with and adjacent to or within the border shall not be allowed.

Conservation practice standards are reviewed periodically, and updated if needed. To obtain the current version of this standard, contact the Natural Resources Conservation Service.

## ADDITIONAL CRITERIA TO PROTECT SOIL AND WATER QUALITY

### Reducing Runoff and Increasing Infiltration

Locate borders around entire perimeter of the field, or as a minimum, install borders as needed to eliminate sloping end rows or headlands.

Borders established along row crop field edges should slope away from the field edge on a ratio of 15 to 1 or steeper. This will permit proper drainage from terrace channels and/or bedded rows.

Minimum width shall be twenty feet. This applies specifically to grasses and/or legumes.

### Maintaining Field Setback Distances for Manure and Chemical Applications

Borders will be designed to conform to minimum field application setback widths established by state or local regulations; or 20 feet, whichever is the greatest.

### Sediment Trapping

Establish a narrow strip of stiff-stemmed upright grass at the crop field/border interface to increase trapping efficiency. The width of this strip will be in addition to the minimum 20 feet required.

### Reducing Soil Compaction from Equipment Parking and Traffic

Border widths will be designed to accommodate equipment parking, loading/unloading equipment, grain harvest operations, etc.

## ADDITIONAL CRITERIA FOR MANAGEMENT OF HARMFUL INSECT POPULATIONS

### Provide a Harbor for Beneficial Insects

Include herbaceous plants that attract beneficial insects. See Planning Considerations for including shrubs.

Mowing, harvesting, and pesticide applications will be scheduled to accommodate life cycle requirements of the beneficial insects.

### Provide a Habitat to Cause Pest Insects to Congregate

Select plants for the field border that attract pest insects.

Use mechanical, cultural, and/or chemical techniques to reduce pest populations when and where they congregate in the field border.

## ADDITIONAL CRITERIA TO PROVIDE WILDLIFE FOOD AND COVER

Use the species and planting rates/spacing indicated as preferred by wildlife in the *Plant Establishment Guide for Virginia*, under the Field Border Practice (including shrubs).

Borders established for wildlife shall have a minimum width of 30 feet consisting of shrubs and/or herbaceous plants. If establishment is a combination, the herbaceous component shall be at least 10 feet wide. The greater the border width, the better for wildlife.

Shrub borders will consist of at least four parallel rows. Space rows 10 feet apart, with a spacing of 5 feet between plants in the row. Use a spacing of 4 feet by 4 feet (or 3 feet by 3 feet) when planting VA 70 shrub lespedeza.

Plant shrubs no closer than 15 feet from the tree base when adjacent to "sapling and/or smaller" trees.

Plant shrubs no closer than the drip line edge of trees when adjacent to "mature" woodland.

Plant a minimum of three shrub species for greater diversity. Use species mixes for herbaceous plantings.

When establishing shrub borders adjacent to woodland, plant a majority of the tallest growing species along the woodland edge and shortest growing species nearer the field edge. Establish herbaceous strips to the field side of the shrub component.

Additional value can be provided by adding a disc strip (minimum 15 feet wide) either on the field side or between the shrubs and planted herbs when a firebreak is needed.

Borders established primarily for wildlife should have a continuous length of at least 300 feet when possible. This does not preclude shorter distances which can occur in smaller fields or in unusual situations.

Mowing, burning, harvesting, and weed control activities within the field border will be scheduled outside of the nesting period (April 1 to August 15) to accommodate reproduction and other requirements of target wildlife species. Exceptions can be made during the establishment period, as needed.

Borders established for wildlife shall not be used primarily as machinery turn areas and access roads. Additional widths for these purposes shall be provided.

### **Cutback Borders for Wildlife**

In cases where loss of existing field size/use is a concern, a cutback field border may apply. Cut all woody vegetation greater than 1 inch in diameter for a minimum strip width of 30 feet into the woods. Maintain by cutting or using herbicide every 4-5 years. To improve the border for wildlife, cut woody regrowth into linear 200-500' sections so that each section is cut rotationally every 4-5 years. A minimum 15-foot wide disc strip or grass/forb planting can also be added on the field edge to add habitat diversity.

### **Vegetative Establishment**

#### Site Preparation

The border will be graded and shaped as shown on plans. Smooth the area as needed to permit proper seedbed preparation and seeding/planting operations.

#### Seedbed Preparation

A proper seedbed will be prepared by disking, harrowing, or by using other suitable tillage implements.

Apply lime and fertilizer in accordance with recommendations of a current soil test. Advise the testing lab if a ground cover mixture will be seeded with the shrubs; and if so, list the plant species.

Incorporate lime and fertilizer into the top 3 to 6 inches of soil as a part of seedbed preparation.

Perform all required seedbed preparations just prior to and in conjunction with the seeding/planting operation. Re-work the seedbed if significant rainfall occurs between the initial seedbed preparation and the seeding/planting operation.

Refer to the *Plant Establishment Guide for Virginia* and the referenced publications listed in this standard for specific guidelines on establishing native warm season grasses (NWSG).

#### Seeding/Planting

Refer to the *Plant Establishment Guide for Virginia* for an approved list of permanent and temporary plant species.

For cool season mixes, a nurse crop such as annual rye for the fall, or an annual such as foxtail millet for the spring should be seeded with the permanent species to provide quick cover and erosion protection. Sow small grain or millet at a rate of twenty-five (25) pounds per acre along with the permanent species. Establishment shall be monitored and the nurse crop shall be mowed as needed to prevent any adverse effect its growth may have on the establishment of the permanent species. For NWSG, a nurse crop is generally not needed unless there is a high erosion hazard. In this case, use a low nurse crop seed rate or mow overtop of the NWSG to prevent shading.

Legume seeds shall be inoculated within one hour prior to planting time with the proper inoculant. If more than one legume is being seeded, the correct inoculant for each legume must be used. Two times the recommended rate of inoculant for each seed type shall be used. A medium recommended by the manufacturer to bond the inoculant to the seed should also be used. The inoculant and/or the inoculated seed shall be protected from the sun and excessive heat at all times. Inoculants shall not be used beyond their expiration date.

Seed shall be uniformly applied with a cultipacker-seeder, cyclone seeder, no-till drill, conventional drill, or by hand on a firm, freshly

prepared seedbed. Seed applied by broadcasting shall be covered by light disking or by using a spike tooth harrow. If seed is applied by methods other than with a cultipacker-seeder or a no-till drill, a cultipacker should be used to firm the seedbed after seeding.

Seeding depth for the permanent species should be 1/4 inch on clayey soils and 1/2 inch on sandy soils. Maximum seeding depth shall be 1 inch. Note that maximum depth for NWSG mixes is 1/4 inch, with up to one half of the seeds appearing on the surface.

When construction is performed outside of the recommended seeding/planting dates for the selected permanent species, the border shall be seeded to temporary ground cover. Planting depth for small grains, millet, or Sudan grass should be 1 to 2 inches. Follow up with permanent seeding/planting at the first available recommended establishment period. When temporary cover has been seeded, use a no-till drill to seed permanent species of grasses and/or legumes into the temporary cover. Perform additional seedbed preparation necessary to smooth out rills and/or gullies that may have formed since the initial seedbed preparation. Seed an approved ground cover mixture with shrub plantings to serve as a "nurse crop" when needed for erosion control and/or for additional wildlife habitat while shrubs become established.

### Mulching

Mulch will be applied in accordance with the Virginia Conservation Practice Standard *Mulching (Code 484)* on sites subject to erosion (includes segments associated with swales crossing the border, on graded sites, on sites with an adverse condition, or when establishment is performed outside of the optimum seeding/planting period). Examples of adverse conditions include but are not limited to shallow, droughty, rocky, clayey or very sandy soils, and where site exposure may adversely affect the satisfactory establishment of permanent cover. Mulch may be required under optimum conditions at the discretion of the planner. Generally, small grain straw is more readily available and is the recommended choice as a mulching material. If used, apply straw mulch at the rate of 2 tons per acre immediately after the seeding/planting operation. Straw mulch shall be anchored with netting, if determined by the planner to be needed.

Based on site conditions, the planner may specify additional protective measures such as silt fences or bale barriers. Straw bale barriers and other protective measures shall be installed properly. Follow manufacturer's specifications and recommendations in the installation of man-made measures. The Virginia Erosion and Sediment Control Handbook may also be used as a guide.

### ENVIRONMENTAL CONCERNS

Planning and implementation of this practice will be preceded by an environmental evaluation using the "Environmental Evaluation Data Sheet", Form VA-EE-1 and related guidelines found in GM-190, Part 410 (Virginia Amendments).

### REPORTING AND/OR CERTIFYING PROCEDURE

Reporting the field border as "applied" and/or certifying the completion of this practice will only be done after the practice has been installed in accordance with this conservation practice standard and seeding/planting of the permanent species was performed within the recommended time period. If seeding/planting of the permanent species is performed outside of the recommended time period, reporting and/or certifying will not be done until the vegetative cover becomes sufficiently established to carry out its intended function.

### CONSIDERATIONS

Field borders are more effective and provide more environmental benefits when established around the entire field.

Field borders enhance the aesthetics and provide stability around the field edge.

Borders provide turn and travel areas for equipment and reduce airborne dust. When used primarily for machinery turn areas, establish to grasses tolerant of these adverse conditions.

Field borders can be used to stabilize required field setback distances applicable to manure and chemical applications.

Wildlife enhancement and other benefits of native plants should be discussed during planning. Native species should be used to meet producer objectives whenever feasible.

A combination of border strips consisting of different plant species and growth forms may be established to increase wildlife habitat diversity. Habitat value also increases as border width increases.

Shrub borders enhance wildlife habitat by providing a transition zone (soft edge) between woods and crops, or between woods and other herbaceous vegetation. Shrub borders will provide escape cover where woody vegetation is lacking. Planted herbaceous components add primarily nesting and some broad cover, while disked areas provide favored brood feeding and overhead cover.

Rows of shrubs adjacent to and along the outside edge of grass or grass/legume field borders may also enhance the borders' ability to harbor beneficial insects.

Consider mixtures of native or introduced grasses, with legumes, rather than single species. Plant selection for wildlife habitat will depend on land capability, purpose, and species of wildlife desired, adjoining land uses, plant availability, and plant suitability.

Consider overseeding an existing grass border with legumes for plant diversity and wildlife benefits.

Special attention is required when planning herbaceous borders along row crop field edges, which receive diverted flow from rows, terraces, and/or diversions. Field borders are intended for shallow sheet flow conditions only. Waterbars or berms may be needed to breakup or redirect concentrated water flows within the borders.

Consider plants tolerant to sediment deposition, and chemicals planned for application on adjoining crop fields.

Consider site exposure, especially when planning shrub borders adjacent to mature woodland. Shrub growth, and fruit/seed production, in particular, will be reduced on north facing or shaded sites. Shrubs established along edges exposed to the east, west, or south generally are more successful.

## PLANS AND SPECIFICATIONS

Specifications for installation and maintenance of the Virginia Conservation Practice Standard *Field Border (Code 386)* shall be prepared according to the Criteria, Considerations, and Operation and Maintenance described in this standard and shall be recorded on approved specification sheets, job sheets, and as narrative statements in conservation plans.

## DESIGN DATA

As a minimum, record and maintain the following planning and design data. Include information on either the drawings, approved forms, or in the engineering field book as appropriate:

- Completed form VA-EE-1
- Location map. Including farm number, tract number, field number (s), and planned length and width of border
- Purpose of border
- Vegetative establishment requirements to include but not limited to: types and species of vegetation planned, site preparation required, seeding rates, and method of seeding grasses and/or legumes, planting rate and spacing for shrubs, lime and fertilizer requirements, kind and rate of mulch if required, amount of netting if required, proposed date range of establishment, and a record of additional erosion control measures if needed
- A plan describing the timing and application of recurring management components

## CHECK DATA

As a minimum, record and maintain the following check out data:

- Actual length and width of border
- Date of establishment

- Deviations from the planned design, if applicable. Deviations will meet the requirements of this Standard.
- A statement indicating extent of compliance with this standard will be included on the design documentation. Document the condition of vegetative cover at time of final check out.
- Certifying signature along with date of practice acceptance.

## OPERATION AND MAINTENANCE

Field borders require careful and ongoing management and maintenance for performance and longevity.

The following will be planned and applied as needed:

Areas damaged by farm machinery, erosion, drought, livestock, or herbicides, etc., will be repaired promptly and re-established according to the original plan.

Remove sediment when 6 inches of sediment has accumulated at the field border/cropland interface.

Shut off sprayers and raise tillage equipment when working in adjacent fields to avoid damage to field borders.

For wildlife purposes, sparse (approximately 40-50%) vegetative cover on herbaceous borders may be acceptable on sites not subject to erosion, especially if natural species are filling in open spaces.

Competitive weed growth and/or invasion of unwanted woody plants should be controlled by applicable methods such as mowing, burning, chemical application, and manual removal. Control of noxious weeds should be in accordance with local or state regulations. All border types established for wildlife habitat shall be protected from livestock at all times.

Apply lime and fertilizer every 3-4 years in accordance with a soil test. Native warm season grasses (NWSG) and shrubs specifically established for wildlife habitat may not require fertilization. Refer to referenced material in this standard for guidance.

Native warm season grasses normally take longer than cool season grasses to become established; therefore, allow additional time before evaluating success rate.

Native warm season grasses should be burned, lightly disked, or mowed every 2-3 years outside of the nesting season (April 1 to August 15) with the exception that it should not be cut after August 25<sup>th</sup>. Once established, treat only about a third of the area each year to improve habitat diversity. (Removal of mowed material by haying, etc., is beneficial to wildlife.) NOTE: All prescribed burning shall be planned and conducted with the assistance of the Virginia Department of Game and Inland Fisheries, Virginia Department of Forestry, or other certified burner.

## REFERENCES

1. Virginia Field Office Technical Guide (FOTG), Section IV.
2. "Conservation Plant Sheets in the Northeast", NRCS.
3. WHIP Practice Instructions, "Field Borders for Wildlife", by NRCS-VA.
4. "Native Warm Season Grasses for Virginia and North Carolina", by the Virginia Department of Game and Inland Fisheries.
5. "Virginia Pest Management Guide" by Virginia Cooperative Extension Service.
6. General Manual 190, Part 410 (Virginia Amendments).
7. *Plant Establishment Guide for Virginia*, by NRCS, Virginia.
8. "Environmental Evaluation Data Sheet", Form VA EE-1, GM-190, Part 410 (Virginia Amendments).
9. Virginia Erosion and Sediment Control Handbook, Third Edition, 1992, Virginia Department of Conservation and Recreation, Division of Soil and Water Conservation.

**NATURAL RESOURCES CONSERVATION SERVICE****VIRGINIA CONSERVATION PRACTICE STANDARD****FIELD BORDER****Approved Practice Narratives****(Feet)****CODE 386**

386 D1 Field Border: Establish a field border at the location indicated on the plan map, and in accordance with the specifications provided. Note that periodic application of maintenance must be made to retain practice function.

386 D2 Field Border: Maintain existing field borders in accordance with NRCS standards as indicated in the Operation and Maintenance Plan provided.

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